

*Kolesnikov, G.S.*

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S/190/60/002/01/09/021  
B004/B061

AUTHORS: Kolesnikov, G. S., Matveyeva, N. G.

TITLE: Aliphatic Polymers and Copolymers. XX. Polymerization and Copolymerization of 1-Fluoro-1,1-dichloro- and 1,1-Difluoro-1,1-dichloropropylene-2

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960. Vol. 2. No. 1. pp. 82-84.

TEXT: In their synthesis of 1-fluoro-1,1-dichloropropylene-2 (I) the authors proceed from 1-fluoro-1,1,3-trichloropropane which is obtained from 1,1,1,3-tetrachloropropane by reaction with  $\text{SbF}_3$  in the presence of  $\text{SbCl}_5$ . This reaction was started at room temperature and ended at  $70^\circ\text{C}$ . The reaction products were distilled off in vacuo. Intensive formation of gas then occurred as a result of decomposition, so that the yield was low (5 - 15%, in some cases 30%). To produce 1,1-difluoro-1-chloropropylene-2 (II), 1,1-difluoro-1,3-dichloropropane was used initially, which was obtained from 1,1,1,3-tetrachloropropane by reaction with  $\text{SbF}_3$ .

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Aliphatic Polymers and Copolymers. XX.  
Polymerization and Copolymerization of  
1-Fluoro-1,1-dichloro- and 1,1-Difluoro-1,1-  
-dichloropropylene-2

S/190/60/002/01/09/021

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82079

(in a molar ratio of 3 : 2) and distilled off at atmospheric pressure (yield: 17%). The dehydrochlorination of both fluorochloropropylenes was carried out with a 10% alkali solution between -5 and -10°C (yield of (I): 23%; of (II): 73%). Both these compounds can be polymerized at 50°C in the presence of 0.5 mole% of benzoyl peroxide. The polymer resulting from (I) has a vitrification temperature of 47°C, is easily soluble in aromatic hydrocarbons and hydrocarbon halides, but insoluble in ether, alcohol, and petroleum ether. The polymer obtained from (II) is easily soluble in most organic solvents, and was liberated from the reaction products by steam distillation. Its vitrification temperature is 25°C. At 50°C in the presence of 0.25 mole% of benzoyl peroxide, (I) and (II) form copolymerizates with methylmethacrylate and styrene. The copolymerizates with styrene have a higher vitrification temperature than homopolymers of styrene, which is explained by the occurrence of P-H bonds between the polymer chains. The authors mention a paper by M. G. Avetyan (Ref. 13). There are 1 table and 15 references: 1 Soviet and 12 US.

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X

Aliphatic Polymers and Copolymers. XX.  
Polymerization and Copolymerization of  
1-Fluoro-1,1-dichloro- and 1,1-Difluoro-1,1-  
-dichloropropylene-2

S/190/60/002/01/09/021  
B004/B061

82079

ASSOCIATION: Institut elementorganicheskikh soedineniy AN SSSR  
(Institute of Elemental-organic Compounds of the AS USSR)

SUBMITTED: October 7, 1959

Card 3/3

KOLESHNIKOV, German Sergeyevich, prof.

Future of gigantic molecules. Izobr.i rats. no.9:18-19 S '60.

(MIRA 13:10)

1. Chlen organizatsionnogo komiteta i uchastnik Mezhdunarodnogo simpoziuma po makromolekulyarnoy khimii, Moskva.  
(Polymers)

KOLESNIKOV, G. S. and KHAN-min (USSR)

Sintez privitykh sopolimerov metodom peresterifikatsii  
Synthesis of graft copolymers by the transesterification method  
IUPAC S III:236-42

report presented at the Intl. Symposium on Macromolecular Chemistry, Moscow,  
14-18 June 60.

KOLESNIKOV, G. S., DAVYDOVA, S. L. and KLIMENTOVA, N. V. (USSR)

~~Polymers? Polymers? Polymers?~~

Polimery soderzhashchie germanii

Germanium containing polymers

IUPAC S I:156-9

report presented at the Intl. Symposium on Macromolecular Chemistry, Moscow,  
14-18 June 60



307/1982

International symposium on macromolecular chemistry, Moscow, 1960.  
Nashimardoviy slovar' po makromolekulyarnoy khimii SSSR, Moskva, 12-18  
Iyulya 1960 g.; doklady i referaty. Sektsiya I. (International Sympos-  
ium on Macromolecular Chemistry Held in Moscow, June 12-18, 1960; Papers and  
Summaries. Section I.) [Moscow, Izd-vo AN SSSR, 1960] 345 p. 5,500 copies  
printed.

Sponsoring Agency: The International Union of Pure and Applied Chemistry,  
Commission on Macromolecular Chemistry

Tech. Ed.: T. V. Polyakova.

PURPOSE: This collection of articles is intended for chemists and researchers  
interested in macromolecular chemistry.

CONTENTS: This is Section I of a multi-volume work containing scientific papers  
on macromolecular chemistry in Moscow. The material includes data on the  
synthesis and properties of polymers, and on the processes of polymerization,  
copolymerization, polycondensation, and polyrecombination. Each text is  
presented in full or summarized in French, English, and Russian. There are  
47 papers, 26 of which were presented by Soviet, Rumanian, Hungarian, and  
Czechoslovakian scientists. No personalities are mentioned. References  
accompany individual articles.

Polysilanes, Ya. I., B. A. Dolgoplov, E. G. Zhuravskaya, B. M. Koshlarskaya, and A. H. Koshlarskaya (USSR). The Synthesis of Cis- and Trans-Disubstituted Polysilanes on Oxide Catalysts and a Study of Their Structure and Properties	13
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Card 6/9

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PHASE I BOOK EXPLOITATION

SOV/4506

Kolesnikov, German Sergeyevich

Sintez vinil'nykh proizvodnykh aromaticheskikh i geterotsikliches-  
kikh soyedineniy (Synthesis of Vinyl Derivatives of Aromatic  
and Heterocyclic Compounds) Moscow, Izd-vo AN SSSR, 1960. 302  
p. Errata slip inserted. 4,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut elementoorgani-  
cheskikh soyedineniy.

Resp. Ed.: V. V. Korshak, Corresponding Member, Academy of Sciences  
USSR; Ed. of Publishing House: D. A. Katrenko; Tech. Ed.: O. M.  
Gus'kova.

PURPOSE: This book is intended for organic and industrial chemists  
interested in the synthesis of high polymer compounds.

COVERAGE: The book is a comprehensive review of the initial chem-  
ical compounds used in the synthesis of vinyl polymers. The  
author presents methods of preparation and the physicochemical  
properties of vinyl derivatives of aromatic and heterocyclic

Card ~~1/19~~

# Synthesis of Vinyl Derivatives (Cont.)

SOV/4506

compounds. No personalities are mentioned. There are 391 references, mainly English.

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Card ~~2/19~~

5(3)

AUTHORS:

Kolesnikov, G. S., Davydova, S. L.

SOV/79-29-6-58/72

TITLE:

Carbochainpolymers and Copolymers (Karbotsapnyye polimery i sopolimery). XIII. Synthesis and Polymerization of Some Unsaturated Compounds, Which Contain Elements of the Group IV (XIII. Sintez i polimerizatsiya nekotorykh nenasyschennykh soyedineniy, soderzhashchikh elementy IV gruppy)

PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol 29, Nr 6, pp 2042-2045 (USSR)

ABSTRACT:

The aim of this work was the synthesis and polymerization of elemental organic compounds, which contain in their composition Sn, Ge, Si, i.e. derivatives of vinyl and styrene of the type  $R_3MCH=CH_2$  and  $R_3MC_6H_4CH=CH_2$ . The triethyl-vinyl-silane was synthesized by dehydro-chlorination of triethyl- $\beta$ -chloro-ethyl silane, by Ushakov and Itenberg (Ref 1) and closer analyzed by Kanazashi (Ref 2). The authors synthesized the trimethyl-vinyl-silane by the reaction of vinyl-magnesium-bromide with trimethyl-chloro-silane, the triethyl-vinyl-stannane, according to D. Seyferth and F. G. A. Stone (Ref 3), by the reaction of the vinyl-magnesium-bromide with triethyl-chloro-stannane, and for the first time, the triethyl-vinyl-germane by the reaction

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Carbochainpolymers and Copolymers. XIII. Synthesis and SOV/79-29-6-58/72  
Polymerization of Some Unsaturated Compounds, Which Contain Elements of the  
Group IV

of the triethyl-bromo-germane with vinyl-magnesium-bromide. Trichloro-vinyl-germane was also synthesized according to A. D. Petrov and his associates (Ref 6), but tribromo-ethyl-germane was used as starting material. By the reaction of 4-triethyl stannyl-phenyl-magnesium-bromide with acetaldehyde according to references 7 and 8 the 4-triethyl-stannyl-phenyl-carbinol was obtained by the reaction of 4-triethyl-germanyl-phenyl-magnesium-bromide with acetaldehyde the 4-triethyl-germanyl-phenyl-methyl-carbinol was obtained and by the reaction of ethylene-oxide with triethyl-germanyl-magnesium-bromide the  $\beta$ -(4-triethyl germanyl phenyl)-ethyl alcohol was obtained. Inasmuch as dehydration of alcohol failed, the method of M. S. Kharasch (Ref 9) for the synthesis of substituted styrenes was used; by the reaction of 4-triethyl-stannyl-phenyl-magnesium with vinyl-bromide in the presence of cobalt salt the 4-triethyl-stannyl styrene resulted. In this way the triethyl-germanyl-styrene and the 4-trimethyl-silyl-styrene were obtained. The experiments to obtain polymers from synthesized unsaturated compounds had only very small yields as a result. Of the

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Carbochainpolymers and Copolymers. XIII. Synthesis and SOV/79-29-6-58/72  
Polymerization of Some Unsaturated Compounds, Which Contain Elements of the  
Group IV

synthesized compounds of germanium, tin and silicon, the tri-  
ethyl-vinyl-germane, the 4-triethyl-germanyl-styrene and the  
4-triethyl-stannyl-styrene were not yet described up to pre-  
sent. There are 11 references, 4 of which are Soviet.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR  
(Institute for Elemental Organic Compounds of the Academy of  
Sciences, USSR)

SUBMITTED: May, 24, 1958

Card 3/3

5(3)

SOV/62-59-7-28/38

AUTHORS: Kolesnikov, G. S., Cheng Han-ming

TITLE: Synthesis of Graft Copolymers From the Reaction of Polymethyl Methacrylate With Composed Polyesters of Different Chain Length  
(Sintez privitykh sopolimerov vzaymodeystviyem polimetilmetakrilata s geterotsepnymi slozhnymi poliefirami)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 7, pp 1336 - 1337 (USSR)

ABSTRACT: This is a report of the attempt made to obtain the copolymers mentioned in the title by re-esterification. The initial substances used were the amorphous polymethyl methacrylate (I) and the crystalline polyester of the polyethylene azelaic acid (II) and polyethylene sebacic acid (II'). The initial substances were prepared according to the usual methods (Ref 1). The thermomechanical curves were plotted from the initial substances (Figs 1,2), and the crystalline structure of the composed polyesters was determined by X-ray analysis. The initial substances were solved in chlorobenzene, and the mixture was boiled at 125° for 25 hours in a flask with dephlegmator in nitrogen atmosphere under the addition of some drops of hydrochloric acid. The cooled-

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Synthesis of Graft Copolymers From the Reaction of Poly- SCV/62-59-7-28/38  
methyl Methacrylate With Composed Polyesters of Different Chain Length

down reaction mixture was introduced in methyl alcohol under continuous stirring, and the precipitate formed in 12 hours was dried in vacuum until constant weight was obtained. The reaction product obtained exhibited a yield of 163% of the polymethyl methacrylate used. The thermomechanical curve of this as well was plotted (likewise Fig 1). The curves revealed that the graft copolymers obtained exhibit a much higher vitrification temperature, as compared to the initial substances. A change of the initial mixture from 2:1 to 1:1 (I:II) caused an alteration of the thermomechanical curves and an increase in the vitrification temperature from 160 to 240°. The thermomechanical curve for the copolymer from a still lower ratio of 1:II occupies an intermediate position between the curves of I and II. For a still higher ratio than 2:1 the curve assumes the form of the crystalline polymer curve. The crystalline structure of the last mentioned compounds was proven by the X-ray analysis. The copolymers obtained are stable in caustic potash solutions, even in the case of long protracted heating up to 80°. The increase in the vitrification temperature is explained by the formation of oriented sections arranged along the principal chain, forming

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Synthesis of Graft Copolymers From the Reaction of Poly- SOV/62-59-7-28/38  
methyl Methacrylate With Composed Polyesters of Different Chain Length

the crystalline phase. The arrangement of the substituents proceeding therefore is characteristic of all isotactic polymers; the latter exhibit, as is known, a high vitrification temperature. The thermomechanical curves and the roentgenograms were plotted in the Institute mentioned in the Association under the supervision of G. L. Slonimskiy and A. I. Kitaygorodskiy. The authors express their gratitude. There are 2 figures and 1 Soviet reference.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR  
(Institute of Elemental-organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: August 28, 1958

Card 3/3



5(3)

AUTHORS:

Kolesnikov, G. S., Fedorova, L. S.,  
Tsetlin, B. L., Klimentova, N. V.

SOV/62-59-4-27/42

TITLE:

Carbon Chain Polymers and Copolymers (Karbonsepynye polimery i sopolimery). Communication 9. Synthesis and Properties of Copolymers of Vinylidene Chloride With Acrylonitrile and Methylmethacrylate (Soobshcheniye 9. Sintez i svoystva sopolimerov khloristogo vinilidena s akrilonitrilom i metilmetakrilatom)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 4, pp 731-735 (USSR)

ABSTRACT:

In the present work an attempt was made of finding out the effect of the composition of copolymers of vinylidene chloride with acrylonitrile and methylmethacrylate on their transition temperatures in various physical states and on their solubility in organic solvents. In the synthesis of the copolymers and in the investigation of their properties the same methods were used as in the investigation of the copolymers of acrylonitrile with methylmethacrylate (Ref 16). The results obtained in the investigation of the composition and properties of the copolymers of the system vinylidenechloride-acrylonitrile

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Carbon Chain Polymers and Copolymers.

SOV/62-59-4-27/42

Communication 9. Synthesis and Properties of Copolymers of Vinylidene Chloride With Acrylonitrile and Methylmethacrylate

are shown in table 1. The conditions were similar in all cases. The only change was in the ratio of the monomers in the initial solution. The values of the vitrification temperature ( $T_{st}$ ) and the flowing temperature ( $T_t$ ) of the copolymers were determined from the thermomechanical compression curves (Fig 1). Table 1 shows that a higher vinylidene chloride-monomer content in the initial solution reduces the yield of the copolymer. Of all copolymers obtained only that with 44.1 mol% vinylidene chloride content is soluble in acetone. This copolymer has the least viscosity and the lowest  $T_{st}$ . Upon transition from the homopolymer of vinylidene chloride to copolymers with already smaller quantities of acrylonitrile the thermomechanic curves assume the form which is characteristic of normal thermomechanic curves of linear amorphous polymers. The values  $T_{st}$  and  $T_t$  decrease rapidly. Table 2 shows the investigation results of the system vinylidene chloride-methylmethacrylate. Figure 2 shows the thermomechanic curves for the samples of

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Carbon Chain Polymers and Copolymers.

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this system. All copolymers are easily soluble in dichloroethane. Copolymers with a content of 20 mol% vinylidene chloride are soluble in acetone. With a higher vinylidene chloride content they become insoluble in acetone. Copolymers with a high vinylidene chloride content have a low  $T_{st}$  and  $T_t$  just as in the system vinylidene chloride-acrylonitrile. Numerous copolymers of this system have a comparatively low  $T_t$  and sufficiently high  $T_{st}$ . For this reason it might be possible to manufacture these copolymers by means of casting methods. There are 2 figures, 2 tables, and 30 references, 1 of which is Soviet.

ASSOCIATION:

Institut elementoorganicheskikh sovedineniy Akademii nauk SSSR  
(Institute of Elemental-organic Compounds of the Academy of Sciences, USSR)

SUBMITTED:  
Card 3/3

July 18, 1957

5(3)

AUTHORS: Kolesnikov, G. S., Klimentova, N. V., SOV/62-59-4-26/42  
Yermolayeva, T. I.

TITLE: Carbon Chain Polymers and Copolymers (Karbonsepynye polimery i sopolimery). Communication 8. Polymerization of Styrene and Methymethacrylate in Solution in the Presence of Tributyl Boron (Soobshcheniye 8. Polimerizatsiya stirola i metilmetakrilata v rastvore v prisutstvii tributilbora)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 4, pp 727-730 (USSR)

ABSTRACT: In the present work methymethacrylate and styrene were polymerized in the presence of variously concentrated tributyl boron whereas the other conditions remained unchanged. The results of the polymerization of methymethacrylate are shown in table 1, those of the polymerization of styrene in table 2. Hence it can be seen that under the reaction conditions assumed and with a concentration of the catalyst less than 2 mol% the yield of the polymer is considerably reduced. The influence of the temperature on the polymerization process was investigated in two consecutive experimental series. The results are shown in tables 3 and 4. Hence it appears that

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Carbon Chain Polymers and Copolymers.

SOV/62-59-4-26/42

Communication 8. Polymerization of Styrene and Methylmethacrylate in Solution in the Presence of Tributyl Boron

the polymer yield rises with temperature in both cases. As a rule, the specific viscosity of the polymer solution is not influenced by temperature changes. The influence of the duration of polymerization on the yield and molecular weight of the polymers was investigated in two further experimental series. The results are shown in tables 5 and 6. It was found that the polymethylmethacrylate yield increases in the course of three hours and then remains constant. With styrene the yield remains constant already after one hour. The concentration of the solvent influences the molecular weight of the polymer in so far as the solvents usually are the carriers of the chain. The effect of the concentration of the solvent on the polymerization was investigated in two further experimental series (Tables 7 and 8). It was found that a stronger concentration on the monomers in the solvent causes a considerable increase of the methylmethacrylate yield and in both cases causes an increase of the molecular weight. There are 8 tables and 3 Soviet references.

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Carbon Chain Polymers and Copolymers.

SOV/62-59-4-26/42

Communication 8. Polymerization of Styrene and Methylmethacrylate in  
Solution in the Presence of Tributyl Boron

ASSOCIATION: Institut elementoorganicheskikh sovedineniy Akademii nauk SSSR  
(Institute of Elemental-organic Compounds of the Academy of  
Sciences, USSR)

SUBMITTED: July 10, 1957

Card 3/3

KOLESNIKOV, G.S.; TSZEN KHAN'-MIN

Carbochain polymers and copolymers. Part 19: Interaction  
between polymethyl methacrylate and polyethylene sebacate.  
Vysokom.sped. 1 no.11:1733-1738 N '59. (MIRA 13:5)

1. Institut elementoorganicheskikh soedineniy Akademii nauk SSSR.  
(Methacrylic acid) (Sebacic acid)

KOLESNIKOV, G.S.; TSENG KHAN'-MIN [TSeng Han-ming]

Carbochain polymers and copolymers. Part 18: Synthesis of  
graft copolymers from polymethyl methacrylate and mixed  
polyesters. Vysokom.sped. 1 no.10:1566-1569 0 '59.

(MIRA 13:3)

1. Institut elementoorganicheskikh soedineniy AN SSSR.  
(Methacrylic acid) (Esters) (Polymers)



KOLESNIKOV, G.S.; DAVYDOVA, S.L.; YERMOLAYEVA, T.I.

Carbochain polymers and copolymers. Part 17: Polymerization  
of diallyl derivatives of silicon and germanium. Vysokom.  
soed. 1 no.10:1493-1495 0 '59. (MIRA 13:3)

1. Institut elementoorganicheskikh soedineniy AN SSSR.  
(Silicon compounds) (Germanium compounds)  
(Polymers)

KOLESHNIKOV, G.S.; FEDOROVA, L.S.

Carbochain polymers and copolymers. Part 12: Emulsion  
polymerisation of vinyl compounds in the presence of tri-  
butylborane. Vysokom.socd. 1 no.8:1266-1270 Ag '59.  
(MIRA 13:2)  
(Polymerization) (Vinyl compounds) (Borane)

KOLESNIKOV, G.S.; RODIONOVA, Ye.F.

Carbon chain polymers and copolymers. Part 15: Synthesis and polymerization of esters of vinylphosphinic acid. Vysokom.sosed. 1 no.4:641-646 Ap '59. (MIRA 12:9)

1. Institut elementoorganicheskikh soedineniy AN SSSR.  
(Phosphinic acid)

KOLESNIKOV, G.S.; SUPRUN, A.P.; SOBOLEVA, T.A.

Carbon chain polymers and copolymers. Part 14: Copolymerization of ethylene with unsaturated compounds in the presence of boron alkyl compounds. Vysokom.soad. 1 no.4:627-634 Ap '59.  
(MIRA 12:9)

1. Institut elementoorganicheskikh soedineniy AN SSSR.  
(Boron compounds) (Ethylene) (Polymerization)

KOLESNIKOV, G.S.; RODIONOVA, Ye.F.; FEDOROVA, L.S.

Carbon chain polymer and copolymers. Part II: Synthesis, polymerization,  
and copolymerization of esters of vinylphosphinic acid. Vysokom. soed.  
1 no.3:367-372 Mr '59. (MIRA 12:10)

1. Institut elementoorganicheskikh soedineniy AN SSSR.  
(Phosphinic acid)

~~KOLESHNIKOV~~, G.S.; KLIMENTOVA, N.V.

Carbon chain polymers and copolymers. Part 10: Block polymerization of methylmethacrylate in the presence of tributylborane. Vysokom. soed. 1 no.3:362-366 Mr '59. (MIRA 12:10)

1. Institut elementoorganicheskikh soedineniy AN SSSR.  
(Polymerisation) (Methacrylic acid) (Borane)

VINOGRADOVA, S.V.; KORSHAK, V.V.; KOLESNIKOV, G.S.; ZHURAIKOV, B.A.

Heterochain polyesters. Part 17: Polyesters of phosphorylated  
dicarboxylic acids. Vysokom. soed. 1 no.3:357-361 Mr '59.  
(MIRA 12:10)

1. Institut elementoorganicheskikh soedineniy AN SSSR.  
(Esters)

5(3)

AUTHORS:

Kolesnikov, G. S., Pogosyan, G. M.

SOV/62-59-2-24/40

TITLE:

Carbon-chain Polymers and Copolymers (Karbonsepnnyye polimery i sopolimery). Communication 7. Polymerization Kinetics of Alkoxy-styrenes (Soobshcheniye 7. Kinetika polimerizatsii alkoksistirolov)

PERIODICAL:

Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1959, Nr 2, pp 335-337 (USSR)

ABSTRACT:

In the present paper it was tried to estimate quantitatively the polymerizability of 2- and 4-alkoxy-styrenes previously obtained (Refs 6,7). It was assumed that the determination of the constant of polymerization rate under given standard conditions would be a comfortable method of the estimation of the polymerizability of nuclear-substituted styrenes and other unsaturated compounds. The following conditions were taken as standard conditions: 1) Polymerization temperature 100°, 2) the polymerization took place in sealed ampoules in a nitrogen atmosphere without oxygen. The "washing out" of the vapor space above the monomer is terminated by the vacuum procedure, 3) Precipitation of the polymer from the mixture with the nonreacted

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Carbon-chain Polymers and Copolymers. Communication 7. Polymerization Kinetics  
of Alkoxy-styrenes

SOV/62-59-2-24/40

monomer by means of methyl alcohol, the polymer-monomer mixture previously being dissolved in benzene or dichloro-ethane. It was found that the polymerization of alkoxy-styrenes in the absence of an initiator or catalyst and without solvent proceeds as the first order reaction. The average constants of the polymerization rate of 2- and 4-alkoxy-styrenes are presented in the table. It could be seen that the polymerization rate of n-alkoxy-styrenes depends both on the position of the alkoxy group with respect to the vinyl group and on the size of the n-alkyl radical of the alkoxy group. The size of the alkyl radical merely influences there the polymerization rate of 2-n-alkoxy-styrenes. It practically played no part in the polymerization of 4-n-alkoxy-styrenes. There are 1 figure, 1 table, and 10 Soviet references.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR  
(Institute of Elemental-Organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: June 3, 1957  
Card 2/2

5(3)

SOV/62-59-2-23/40

AUTHORS: Kolesnikov, G. S., Avetyan, M. G.

TITLE: Carbon-chain Polymers and Copolymers (Karbonsepnnyye polimery i sopolimery). Communication 6. Synthesis and Polymerization of 1,1-Dichloro-2-fluoro Ethylene (Soobshcheniye 6. Sintez i polimerizatsiya 1,1-dikhlor-2-ftoretilena)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1959, Nr 2, pp 331-334 (USSR)

ABSTRACT: In the present paper 1,1-dichloro-2-fluoro ethylene was synthesized as follows: 1,1,2-trichloro-2-fluoro ethane was obtained by interaction of 1,1,2,2-tetrachloro ethane with antimony fluoride in the presence of antimony pentachloride at 130 - 140° (Ref 10). The 1,1,2-trichloro-2-fluoro ethane was removed from the reaction medium during its formation. Thus its yield was increased up to 83 - 85% since a further substitution of fluorine for chlorine in the 1,1,2-trichloro-2-fluoro ethane as well as its transformation into 1,1-dichloro-2,2-difluoro ethane could be largely avoided. 1,1-dichloro-2-fluoro ethylene was obtained from 1,1,2-trichloro-2-fluoro ethane by separation of hydrogen chloride with sodium isoamylate. 1,1-dichloro-2-

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SOV/62-59-2-23/40

## Carbon-chain Polymers and Copolymers. Communication 6. Synthesis and Polymerization of 1,1-Dichloro-2-fluoro Ethylene

fluoro ethylene polymerizes only with difficulty on heating without initiator and catalyst. The concentration of the initiator considerably affects the yield of polymers (Table 1, Fig 1). In order to determine the influence exerted by the polymerization time upon the yield of the polymer, an experimental series was carried out at 100° in the presence of 1 mol % of benzoyl peroxide (Table 2, Fig 2). The polymer of 1,1-dichloro-2-fluoro ethylene shows a characteristic viscosity of 0.035 (20°, toluene). The thermomechanical curve which had been obtained on a load of 0.8 kg/cm<sup>2</sup> is given in figure 3. The vitrification temperature is 47°. The softening point of polyvinylidene chloride is 185 - 200° (Ref 14). There are 3 figures, 2 tables, and 15 references, 5 of which are Soviet.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR  
(Institute of Elemental-Organic Compounds of the Academy of Sciences, USSR)

Card 2/3

5(3)

SOV/62-59-1-24/38

AUTHORS: Kolesnikov, G. S., Fedorova, L. S.

TITLE: Synthesis of Polyarylenealkyls (Sintez poliarilenalkilov).  
Communication X. Destruction of Poly(Chlorophenylene)Ethyl  
by Chloro Benzene and Benzene (Soobshcheniye 10. Destruktsiya  
poli(khlorfenilen)etila khlorbenzolom i benzolom)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,  
1959, Nr 1, pp 144 - 147 (USSR)

ABSTRACT: In the present paper the authors investigated the destruction  
of poly(chlorophenylene)ethyl synthesized by polycondensation  
from dichloro ethane and chloro benzene. In the first series  
of experiments the effect exerted by the concentration of  
aluminum chloride upon the destruction of poly(chlorophenylene)  
ethyl by chloro benzene was investigated. The results are  
given in Table 1. In the second series of experiments the  
influence exercised by the destruction agent upon the course  
of destruction was investigated. The results of this series  
of experiments are given in Table 2. The results obtained  
in the investigation of the destruction of poly(chloro-

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Synthesis of Polyarylenealkyls. Communication X.

SOV/62-59-1-24/38

Destruction of Poly(Chlorophenylene)Ethyl by Chloro Benzene and Benzene

phenylene)ethyl by chloro benzene in the presence of aluminum chloride are in accordance with the results yielded by the study of the destruction of polyphenylene ethyl by benzene in the presence of the same catalyst. Thus, it can be taken for sure that the aromatic hydrocarbon, which represents one of the initial components in the synthesis of polyarylenealkyl, exerts a destructive effect. This holds especially for the initial stage of the polycondensation process, if the concentration of this hydrocarbon in the reaction mixture is relatively high. In addition to that, two series of experiments were performed; 1) to determine the effect exercised by the concentration of the catalyst on the destruction of poly(chlorophenylene)ethyl by benzene (Table 3); 2) to explain the effect of the benzene concentration on the destruction process (Table 4). It was found that poly(chlorophenylene)ethyl is destroyed not only under the influence of chloro benzene but also benzene (in the presence of aluminum chloride). Therefore the destruction of polyarylenealkyls can be effected not only by aromatic initial hydrocarbons but also by any other aromatic hydro-

Card 2/3

Synthesis of Polyarylenealkyls. Communication X. SOV/62-59-1-24/38  
Destruction of Poly(Chlorophenylene)Ethyl by Chloro Benzene and Benzene

carbons. The latter must contain at least one hydrogen atom which is linked to the carbon atom of the aromatic nucleus and can be replaced by a polyarylenealkyl radical. There are 4 tables, and 4 references, 3 of which are Soviet.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk  
SSSR (Institute of Elemental Organic Compounds of the Academy  
of Sciences, USSR)

SUBMITTED: April 19, 1957

Card 3/3

SET AND FILE NUMBER										PROCESSING AND PROPERTY NUMBER										TAG AND ITEM NUMBER									
<div style="position: relative;"> <div style="position: absolute; top: 10px; left: 10px; font-size: 2em;">CR</div> <div style="position: absolute; top: 10px; right: 10px; font-size: 2em;">P</div> <div style="position: absolute; top: 200px; left: 300px;"> <p>Friedel-Crafts reaction. I. V. V. Korshak and G. S. Koshulnikov. <i>J. Gen. Chem.</i> (U.S.S.R.) 14, 435-7 (1944) (English summary).—<math>AlBr_3</math> (3.10 g.) and 40 cc. benzene were treated with agitation with 2.1 g. <math>ClCO_2Et</math>; the evolved gases were shown to contain 82.26 mol. % <math>HBr</math> and 17.74 mol. % <math>HCl</math>; the reaction mass was decompl. with <math>HCl</math> and the org. layer distd. to yield 85% <math>EtPh</math>. <math>AcBr</math> (0.98 g.) was treated with cooling with 2.52 g. <math>ClCO_2Et</math> to yield a brown soln. which was then heated to <math>35^\circ</math>; the evolved gases were shown to contain 81.87 mol. % <math>HBr</math> and 18.13 mol. % <math>HCl</math>. The complex between <math>AlBr_3</math> and <math>AcBr</math> was subjected to distn., yielding a mist. of <math>ArCl</math> and <math>AcBr</math> (82.58 and 16.42 mol. %, resp.). The reaction of the above complex with abs. <math>EtOH</math> or benzene gave, analogously, mists. of <math>HBr</math> and <math>HCl</math> in similar ratio. The reaction mechanism apparently involves the formation of an ion of <math>AlClBr_2</math>, which can react through either halogen atom.</p> <p style="text-align: right;">O. M. Kozolapoff</p> </div> </div>																													
<div style="font-size: 1.5em; font-family: cursive;">Moscow Dept. Lenin Chem-Tech Inst. in. Mendeleev</div>																													
<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> <div> <p>ASO-SLR REVALUATION LITERATURE CLASSIFICATION</p> <p>RIGHTS DIVISION</p> </div> <div> <p>RECORDS SECTION</p> <p>LIBRARY ONE ONLY 111</p> </div> </div> </div>																													

1ST AND 2ND CODES		PROCESSES AND PROPERTIES INDEX	3RD AND 4TH CODES
10		<p><i>ca</i></p> <p><b>Mechanism of the Friedel-Crafts reaction.</b> H. V. V. Koshak and G. S. Kolesnikov (Moscow Chem. Tech. Inst. Mendeleev). <i>J. Gen. Chem.</i> (U.S.S.R.) 14, 1002-5 (1944) (English summary); cf. <i>C.A.</i> 39, 4595. It was shown that in mixts. of <math>AlBr_3</math> with cyclohexyl chloride, the halogen bound with Al, as detd. by hydrolysis, consists of 69.52% Br and 19.48% Cl. Detns. of HCl and <math>HBr</math> in the off gases from the reaction in benzene halogen derivs. in the presence of a different halide of Al showed the presence of both gases. Thus, with <math>AlBr_3</math> catalyst the following compn. gave the gas compn. as listed below: <math>H_2Cl</math> 31.63%, HCl, 68.25%, <math>HBr</math>; <math>PhCH_2Cl</math> 25.67% and 74.33%; cyclohexyl chloride 24.07% and 75.93%; <i>p</i>-<math>ClC_6H_4Cl</math> 21.88% and 78.12%; <math>PrCl</math> 18.17% and 81.83%. With <math>AlCl_3</math> catalyst the following gas compn. were found: <math>H_2Br</math> 80.47%, HCl, 19.53%; <math>HBr</math>; <math>PhCH_2Br</math> 70.41% and 29.59%; <math>HBr</math> 69.74% and 30.26%; <math>PrBr</math> 66.67% and 33.33%. The results support the formation of an intermediate complex of the type <math>R(AlX_3)</math>.</p> <p>G. M. Kosolapoff</p>	10
<p>ASAC-56A METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</p>			



1ST AND 2ND COLUMNS										3RD AND 4TH COLUMNS									
PROCESSES AND PROPERTIES INDEX																			
<p>ca</p>										<p>10</p>									
<p>Tetraethyllead. V. V. Korshak and G. S. Kolesnikov. <i>Uspekhi Khim.</i> 18, 325-42(1949).—A review of the applications, lab. and com. methods of prepn., and phys., chem., and physiol. properties of PbEt<sub>4</sub>. 140 references. Arild J. Miller.</p>																			
<p>ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
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<p>SECTION 131102174</p>										<p>SECTION 131102174</p>									

KOLESNIKOV, G. S.

USSR/Chemistry - Condensation, chemical  
Chemistry - 1, 2-dichloroethane

Apr 47

"The Polycondensation Products of 1, 2-dichloroethane With Benzene," V. V. Korobak,  
G. S. Kolesnikov, A. V. Kharchevnikova, 3 pp

"CR Acad Sci" Vol XVI, No 2

Tables of characteristics. Structural formulae.

PA 11F72

USSR/General Problems of Pathology, Metabolism

U-5

Abs Jour : Ref Zhur - Biol., No 13, 1958, No 61066

Author : Nosalevich O.M., Kolasnikov G.S

Inst : -

Title : Histochemistry of a Nuclear Metabolism in the Treatment of  
Cancer of the Mammary Gland by Roentgen Rays

Orig Pub : Arkhiv Patologii, 1957, 19, No 4, 40-46, 89

Abstract : This histochemical investigation of DNA, according to Feyl'gen and of the RNA according to Brashe with Modifications by Toskin, in 20 histologically different cancer tumors of the mammary gland. Investigations were made on women who had prior to the operation been subjected to Roentgen radiation of 4000-6100 g or to the effect of Co<sup>60</sup>, and on 21 control (non-irradiated) tumors. Concentration was determined visually, according to the intensity of the stain. In most untreated tumors the content of nuclear acids was high (NA), especially in clinically malignant scirrhus. In less malignant, brain-shaped cancers, duct and papillary adenocarcinoma the amount

Card : 1/2

TITLE AND SUB-HEADINGS		PROCESSING AND PROPERTY INDEX		KEY WORDS AND CATEGORIES	
CA		10			
<p>Alkylation of acyl derivatives of aromatic amines by the Friedel-Crafts reaction. I. Preparation of <i>p</i>-tert-butylacetanilide. G. S. Kolesnikov and K. V. Borisova (Moscow Chem. Tech. Inst.), <i>J. Gen. Chem. (U.S.S.R.)</i> 17, 1519-21 (1947) (in Russian).—Attempts to make PhNHAc react with <i>iso</i>-BuI<sub>2</sub> in the presence of AlCl<sub>3</sub> at -5° to -10° in (CH<sub>2</sub>Cl)<sub>2</sub> failed, contrary to claims of U.S. pat. 2,002,970 (C.A. 41, 78944), 2,062,972 (C.A. 41, 78955) and 2,062,973 (C.A. 41, 78933). Only when the reaction was run at 75° in CH<sub>2</sub>Cl<sub>2</sub> did alkylation take place to give <i>p</i>-tert-BuC<sub>6</sub>H<sub>4</sub>NHAc. C<sub>6</sub>H<sub>5</sub>Cl<sub>2</sub> (150 cc.), 27 g. PhNHAc, and 33 g. AlCl<sub>3</sub> heated to 60° with stirring (if homogeneous, then cooled to room temp., treated with 31.5 g. <i>iso</i>-BuI<sub>2</sub>, heated to 50-55° 40 min., then to 70-5° 2 hrs., cooled, poured into 1:2 HCl, the org. layer sep., washed with H<sub>2</sub>O, treated with 250 cc. 30% H<sub>2</sub>SO<sub>4</sub>, steam-distd. 3 hrs., and the residue made alk. with NaOH and again steam-distd., gave 8.5 g. PhNH<sub>2</sub>, while the distn. residue, 10 g., was <i>p</i>-tert-BuC<sub>6</sub>H<sub>4</sub>NHAc, m. 168-70° (from dil. EtOH). G. M. Kosolapoff</p>					
<p>ASH-514 METALLURGICAL LITERATURE CLASSIFICATION</p>					
FROM SYNOPSIS		INTRODUCTION		REFERENCES	
SYNOPSIS		INTRODUCTION		REFERENCES	

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CA

Mechanism of the Friedel-Crafts reaction. VI. Reaction of alkyl iodides with benzene. V. V. Korshak and G. S. Kozlovskiy (Mendeleev Chem. Tech. Inst., Moscow); *Chem. (U.S.S.R.)* 17, 1643-4 (1947) (in Russ.); *cf. C.A.* 42, 1217h. — The reaction of benzene with RI in the presence of  $AlCl_3$  was studied with analysis of the RX evolved. In the case of MeI the HCl:HI ratio was 3:1; RI gave a gas contg. 28.95 mol. % HCl and 74.13 mol. % HI. Similarly, decamp. of RI with  $AlCl_3$  gives 34.17% HCl and 65.83% HI. Mixing HCl in benzene with an equimol. amt. of  $AlBr_3$  in benzene, followed by heating, gave a gas mixt. contg. 75.01 mol. % HBr and 24.99 mol. % HCl. This proves the occurrence of the reaction of HCl with  $AlBr_3$  in benzene.  $AlBr_3$  in warm benzene was slowly treated with an equimol. amt. of HCl or  $BaCl_2$  in benzene, and the gas mixt. evolved was analyzed in 4 separate portions (total time, 1 hr.); with  $BaCl_2$  as addend, the gas compn. varied from 9.31 mol. % HCl and 90.69 mol. % HBr in the initial stage, to 27.76 mol. % HCl and 72.24 mol. % HBr in the final data.; when HCl was the addend, the initial gas was 4.5 mol. % HCl and 95.5 mol. % HBr, going up to 28.26 mol. % HCl and 71.74 mol. % HBr in the final data. This indicates that the process has characteristics of an equil. reaction; both the HX and the RX reactions are very similar. G. M. Kosolapoff

AFR-514 METALLURGICAL LITERATURE CLASSIFICATION

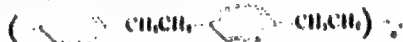
FROM STUDENT

FROM SCHOLAR

SELECT ONE ONLY SEE

10

The reaction of 1,2-dichloroethane with benzene. V. V. Korschak, G. S. Kolesnikov, and A. V. Kharchevnikova. *Compt. rend. acad. sci. U.R.S.S.* 36, 1007 (1967) (in French). The condensation products of  $(CH_2Cl)_2$  (I) and  $C_6H_6$  in the presence of  $AlCl_3$  have been studied. Mixts. of 204 g.  $C_6H_6$  and 50 g. I were heated 4.5 hrs. at 85° with varying amts. of  $AlCl_3$  (67.4, 13.5, and 6.7 g.). The yield of diphenylethane (II) increased in these cases from 43.1% to 54.3% to 59.0%, whereas the yield of the polymeric condensation product decreased with the use of less  $AlCl_3$ . When the amt. of  $AlCl_3$  used was held const. but the mole ratio of  $C_6H_6$  to I was varied (13.5, 0.7, 3.33, 1.68, 1.10, 0.84, and 0.67), the % yields of II were resp. 68.3, 54.3, 37.0, 12.0, 0, 0, and 0, whereas the amt. of polymer increased. The polymeric product where the yield of II was 0% was insol. in  $C_6H_6$ , I, MeOH, and EtOH. In all other expts. the  $C_6H_6$ -sol. polymeric products were shown to have sp. viscosities (4% in  $C_6H_6$ ) of 0.08-0.14. Oxidation of these products resulted in the formation of terephthalic acid. Hence it was concluded that the polymer was polyphenyleneethylene.



M. Q. Webb  
Dibenzoylacetophenone. Georges Dupont and Jean Germain. *Bull. soc. chim. France* 1947, 530-9. A mixt. of 2 g.  $BeCl_2$  (II) and 15 g.  $H_2SO_4$  (saturated in the cold and acidified with a few drops  $H_2SO_4$ ) heated several hrs. on the  $H_2O$  bath gives an uncrystallizable oil which, after extr. with Et<sub>2</sub>O and agitation of this soln. with  $Ca(OAc)_2$ , gives a green ppt. of the  $Ca$  salt of the end form of  $BeCl_2/H_2SO_4$  (III) (from  $C_6H_6$ ), probably a mixt. of the *cis* and *trans* isomers (III) (*cis* and *trans*) and Ph-

$COOH$ . A similar result is obtained with 10 g.  $AcONa$ , 50 g. alc., and 3 g. I (cf. Lutz, C.I. 21, 82). I (8 g.) and 1 g. Na in 75 g. MeOH, heated 5 min. on the  $H_2O$  bath and evaporated *in vacuo*, give, after dissolving the residue in  $H_2O$ , acidifying, and extr., the oil with petr. ether, *cis*-III (IV), m. 81°. IV is also obtained by heating on the  $H_2O$  bath 1 hr., amine derivs. of I (cf. Dupont, C.A. 22, 380) and a slight excess of alc.  $H_2SO_4$ . Partial hydrogenation of I in alc. with Raney Ni gives 50%  $BeCl_2:CH_3$ , m. 130-1°. Cyclopentadiene (20 g.) added to 10 g. I in 50 g. cold, dry Et<sub>2</sub>O gives 2,3-dibenzoyl-4,5-dichloro-2,3,4,5-tetrahydronaphthalene (V), m. 142°. V (3 g.) heated a few min. on the  $H_2O$  bath, give, after pptn. with  $H_2O$  and recrystn. from alc., a pyridazine deriv. (VI), m. 201-2°. V (1 g.), 25 cc. AcOH, and an excess of  $NH_3$  (CONHNH<sub>2</sub>·HCl (VII) and AcONa, heated 1 hr. on the  $H_2O$  bath, give a monosemicarbazone (VIII), m. 180°, which will not react further with VII. V with Raney Ni which absorbs 1 mol. H to give a compd. (IX), m. 131-5°. IX with 5% aq. permanganate gives  $BeCl_2$  and *cis*-1,3-cyclopentenedicarboxylic acid, m. 120° (cf. C.I. 41, 2420, for the structures of V, VI, VIII, and IX).

R. L. May

KOLESIKOV, G. S.

High-molecular weight compounds. XV. Products of polycondensation of 1,2-dichloroethane with benzene. V. V. Korshak, G. S. Kolesnikov, and A. V. Kharchevnikova (Mendeleev Chem. Tech. Inst., Moscow). *J. Gen. Chem. (U.S.S.R.)* 18, 108-204 (1948) (in Russian). — The reaction of  $C_6H_6$  and  $(CH_2Cl)_2$  in the presence of  $AlCl_3$  was shown to be affected by variation of the relative amts. of the components. Oxidation of the polyphenylethyl (polycondensation product) by Cr oxide gives terephthalic acid, indicating that the polymer is made of Ph nuclei joined by  $CH_2CH_2$  links in para positions.  $C_6H_6$  (264 g.) and 50 g.  $(CH_2Cl)_2$  were treated with 67.4-67.7 g.  $AlCl_3$  4.5 hrs. on a steam bath; the yield of the polymer dropped with smaller amts. of  $AlCl_3$  (from 37.7 g. to 15 g.) but its nature was not changed; it was still a homogeneous mass, sol. in  $C_6H_6$ . In a 2nd series the  $AlCl_3$  and  $C_6H_6$  were held const. (amts. not given) while the  $(CH_2Cl)_2$  was varied from 25 g. to 500 g. (mol. ratio to  $C_6H_6$  from 13.5 to 0.67); as the amt. of the dichloride increases, the amt. of  $(Ph-CH_2)_n$  drops and reaches zero at mol. ratios below 1 (the reaction time had to be reduced from 4.5 hrs. to 1-2.5 hrs. in these runs because of excessive foaming); the amt. of the polymer, however, constantly rises, from 0.2 g. to 300 g. Only when the ratio of  $C_6H_6$  to the dichloride drops lower than 1.1 does the polymer change its properties; it becomes insol. in  $C_6H_6$ . The mol. wt. of the polymer (by viscosity in benzene) remains in the 1200-1300 range until

the above ratio reaches 1.68, when the mol. wt. of the product climbs to 2100. When the polymer (3-7 g.) was boiled 7-18 hrs. with 80 cc.  $H_2O$ , 100 g.  $H_2SO_4$ , and 40 g.  $K_2Cr_2O_7$ , only terephthalic acid was isolated. This also occurred when the benzene-insol. polymer was oxidized. The formation of the insol. polymer is readily explained by the fact that with the proportions used all the  $C_6H_6$  reacts to form the polymer and the latter is then able to condense further with the dichloride through reaction in the ortho position, leading to 3-dimensional mols. by cross linking.

G. M. Kosolapoff

CA

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Alkylation of acyl derivatives of aromatic amines by the Friedel-Crafts reaction. II. Alkylation of acetanilide. G. S. Kulesnikov and T. V. Smirnova (Mendeleev Chem.-Technol. Inst., Moscow). *Zhur. Obshch. Khim.* (J. Gen. Chem.) 20, 1427-30 (1950); cf. C.A. 42, 2385. AcNHPh cannot be alkylated with MeI, EtBr, PrBr, BuBr, or t-BuCl in the presence of  $AlCl_3$ . However, heating 34 g. AcNHPh, 40 g.  $AlCl_3$ , and 150 ml.  $(CHCl_3)_2$  to  $60^\circ$  until a soln. formed, cooling to room temp., dropwise addn. of 27 g. *tert*-BuCl, heating 30 min. at  $55-60^\circ$  and 3 hrs. at  $100-120^\circ$ , and suitable working-up gave 5 g. PhNH<sub>2</sub> and 8.5 g. *tert*-BuC<sub>6</sub>H<sub>4</sub>NH<sub>2</sub> among the distillable products, and a 20-g. residue of *p*-*tert*-BuC<sub>6</sub>H<sub>4</sub>NHAc, m.  $168-9^\circ$ ; the total yield of alkylated product was 70%, based on converted AcNHPh. The mechanism appears to be: complex formation with  $AlCl_3$  and AcNHPh, followed by further complex formation with RX (iso-BuBr, which also gives a *tert*-Bu deriv. at this stage, isomerizes to the Me<sub>2</sub>C radical), and the complex rearranges to the final structure of the alkylated product, with evolution of HX. Apparently only radicals capable of conversion to the tertiary structure are capable of alkylation. G. M. Kosolapoff



1ST AND 2ND CODES

PROCESSING AND PROPERTY INDEX

27

B

A New Type of Linear Polycondensation—Rearylation. (In Russian.) V. V. Kozhakov and G. S. Kozlovskiy. Doklady Akademii Nauk SSSR (Reports of the Academy of Sciences of the USSR), new ser., v. 70, Feb. 1, 1950, p. 625-627.

Indicates possibility of condensation of aromatic hydrocarbons with formation of linear high polymers plus benzene. This possibility was verified for polycondensation of 1,2-diphenylethanes in the presence of anhydrous  $AlCl_3$ .

ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND CODES

3RD AND 4TH CODES

5TH AND 6TH CODES

7TH AND 8TH CODES

9TH AND 10TH CODES

11TH AND 12TH CODES

13TH AND 14TH CODES

15TH AND 16TH CODES

17TH AND 18TH CODES

19TH AND 20TH CODES

21ST AND 22ND CODES

23RD AND 24TH CODES

25TH AND 26TH CODES

27TH AND 28TH CODES

29TH AND 30TH CODES

31ST AND 32ND CODES

33RD AND 34TH CODES

35TH AND 36TH CODES

37TH AND 38TH CODES

39TH AND 40TH CODES

41ST AND 42ND CODES

43RD AND 44TH CODES

45TH AND 46TH CODES

47TH AND 48TH CODES

49TH AND 50TH CODES

51ST AND 52ND CODES

53RD AND 54TH CODES

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57TH AND 58TH CODES

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89TH AND 90TH CODES

91ST AND 92ND CODES

93RD AND 94TH CODES

95TH AND 96TH CODES

97TH AND 98TH CODES

99TH AND 100TH CODES

KOLESNIKOV, G. S.

USSR/Chemistry - Polyamide fibers Sep/Oct 51

High-Molecular Compounds. Communication 39.  
Condensation of 1,2-Dichloroethane With Benzene,  
G. S. Kolesnikov, V. V. Korshak, T. V. Smirnov,  
Inst of Org Chem, Acad Sci USSR

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 5,  
pp 596-600

Study of polycondensation of  $C_2H_4Cl_2$  with dif-  
ferent molar proportions of  $C_6H_6$  in presence of  
 $AlCl_3$  revealed that chief product is polyphenyl-  
ene ethyl, other products are diphenylethane and

195T20

USSR/Chemistry - Polyamide fibers Sep/Oct 51  
(Contd)

bis-(p-(3-phenylethyl))-benzene. Mol wt of  
polyphenylene ethyl increases with reduced ex-  
cess of  $C_6H_6$ . (smaller molar ratio of  $C_6H_6$  to  
 $C_2H_4Cl_2$ ).

195T20

PA 195T20

B TR

28

9505\* High-Molecular Weight Compounds. (In Russian.)  
Part 41. Alcoholysis of Polyesters. V. V. Korshak and S. V.  
Vinogradova. Part 42. Rearrangement of Marshalkylene. G.  
S. Kolesnikov and V. V. Korshak. *Izvestiya Akademii Nauk  
SSSR, Section of Chemical Sciences*, Nov.-Dec. 1951, p. 750  
770.  
In Part 41, alcoholysis of polyhexamethylsebacate was studied;  
and, in Part 42, syntheses of 1,3-diphenylpropane, 1,2-di-  
phenylethane, 1,4-diphenylpropane, and 1,4-diphenylbutane,  
and 1,4-diphenylbutane, were studied. Reactions are discussed  
22 ref.

PA 197112

KOLESNIKOV, G. S.

USSR/Chemistry - High-Molecular  
Compounds Nov/Dec 51

"High-Molecular Compounds. XLII. Rearylation  
of Diarylalkylenes," G. S. Kolesnikov, V. V.  
Korshak, Inst Org Chem, Acad Sci USSR, Moscow  
Chemical Technol Inst imeni D. I. Mendeleev

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 6, pp 761-  
770

Polycondensation of 1,2-diphenylethane in the  
presence of  $AlCl_3$  into polyphenyleneethyl, as  
described previously by the authors is based on  
a rearylation (benzene is liberated). In this  
instance, established that diphenylmethane,  
197112

USSR/Chemistry - High-Molecular  
Compounds (Contd) Nov/Dec 51

1,1-diphenylethane, 1,3-diphenylpropane (I), 1,4-  
diphenylbutane (II), and 1,2-di-(beta-tetralyl)-  
ethane also undergo rearylation. Found that with  
I and II, there is cyclic condensation under for-  
mation of hydriindene and tetralin in addition to  
polycondensation. With II, cyclization predomi-  
nates. In the rearylation of 1,3-diphenylpro-  
pane, polyphenylenepropyl is formed.

197112

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CA

Compounds of high molecular weight. XXX. Synthesis of 2-methoxy-1-vinylnaphthalene. G. S. Kolesnikov, V. V. Korschak, and I. P. Krakovskaya (D. I. Mendeleev Chem. Technol. Inst., Moscow). *Zhur. Obshch. Khim.* (J. Gen. Chem.) **21**, 397-401 (1951); cf. C.A. **45**, 7601c. — 2-CulH<sub>4</sub>OH (100 g.) in 200 g. NaOH, 400 ml. H<sub>2</sub>O, and 400 ml. EtOH at 60-70° is treated with 100 g. CHCl<sub>3</sub>; after the red color develops, the EtOH is distilled off and mix. cooled and acidified with HCl; extr. with Et<sub>2</sub>O yields 72% 2-hydroxy-1-naphthaldehyde, b.p. 185-7°, m. 78-80° (from EtOH). This (3.5 g.) is added to 80 ml. 2% KOH at the b.p. and treated with 10 g. Me<sub>2</sub>SO<sub>4</sub> over 20-30 min. with the mix. kept alk. at all times; filtration after cooling yields 80% crude 2-methoxy-1-naphthaldehyde, m. 84° (from EtOH); a little staining material may be recovered from the soln. The product (4 g.) added to MeMgI (from 10 g. MeI) in 25 ml. Et<sub>2</sub>O and 15 ml. dry CCl<sub>4</sub> and heated 30-40 min. yields after the usual treatment 80.6% (2-methoxy-1-naphthyl)methylcarbinol, m. 72-3° (from Et<sub>2</sub>O, then from petr. ether). Dehydration by heating with an open flame in the presence of KHSO<sub>4</sub> and a little hydroquinone yields a glassy polymer of 2-methoxy-1-vinylnaphthalene, softening about 110-15°, with polymerization stage 64. Dehydration under reduced pressure (20 mm.) gives a similar polymer, softening at 104°, m. 154°. Hence, the 2-MeO group does not sterically hinder the activity of the vinyl group.

G. M. Kosolapoff

1951

CA

10

**Transarylation reaction of diarylalkanes** V. A. Korshak and G. S. Kolenikov. *Doklady Akad. Nauk S.S.S.R.* 76, 69-72 (1951); cf. *C.A.* 44, 4889a. — Treatment of  $\text{Ph-CH}_3$ ,  $\text{Ph-CHMe}$ ,  $\text{Ph-CH}_2\text{CH}_2\text{Ph}$ ,  $\text{Ph(CH}_2)_3\text{Ph}$ ,  $\text{Ph(CH}_2)_4\text{Ph}$ , and 1,2-bis(tetrahydro-2-naphthyl)ethane with  $\text{AlCl}_3$  yields  $\text{C}_6\text{H}_6$  or the corresponding elementary aromatic hydrocarbon, and a polymeric product (linear or insol. tridimensional). The insol. tridimensional polymers appear to result by chain branching, possibly at the ortho positions of Ph rings in a linear polymer. ( $\text{PhCH}_2$ )<sub>n</sub> yields, as polymeric product, polyphenyleneethyl (*C.A.* 42, 7274e), proved by oxidation to  $p\text{-C}_6\text{H}_4(\text{CO}_2\text{H})_2$ . The polymer from  $\text{Ph(CH}_2)_3\text{Ph}$  consists of  $-\text{C}_6\text{H}_4\text{CH}_2\text{CH}_2\text{CH}_2-$  units, as shown by oxidation to  $p\text{-C}_6\text{H}_4(\text{CO}_2\text{H})_2$  and  $p\text{-C}_6\text{H}_4(\text{CH}_2\text{CO}_2\text{H})_2$ ; along with this linear product there is indication of ring formation and chain ends as inden was also isolated. With  $\text{Ph(CH}_2)_4\text{Ph}$  the cyclization is predominant and the main product is tetrahydronaphthalene and  $\text{C}_{10}\text{H}_8$ ; the reaction being reversible, 5.9-8.4% yields of  $\text{Ph(CH}_2)_3\text{Ph}$  are obtained from tetrahydronaphthalene and  $\text{AlCl}_3$ . The possible mode of formation of 9,10-dimethyl-9,10-dihydroanthracene from  $\text{Ph-CHMe}$  and of anthracene from  $\text{Ph-CH}_2$  in the presence of  $\text{AlCl}_3$  may be: reaction of 2 mols. of the aromatic compd., yielding *o*- and *p*-condensation dimers; the *o*-isomer readily cyclizes with elimination of  $\text{C}_6\text{H}_6$ , while the *p*-isomer may be isomerized into the *o*-isomer to carry the cyclization reaction to high yields. G. M. K.

1951

Chemical Abst.  
Vol. 48 No. 6  
Mar. 25, 1954  
Organic Chemistry

✓ Transarylation reaction. G. S. Kolesnikov, V. V. Kor-  
shak, and I. V. Sengnova. *Dokl. Akad. Nauk SSSR*, 1953, 85, 1051.  
Sov. Chem., 1953, 34, 54. --- The action of  $AlCl_3$  on aromatic  
compds.,  $Ar(CRR')_2$ , leads to transarylation in which a  
low-mol. wt. aromatic hydrocarbon (such as  $C_6H_6$ ) is elimi-  
nated and a high-mol. wt. hydrocarbon is formed. This reac-  
tion occurs with  $Ph_2CH_2$ ,  $MeCH_2Ph$ ,  $(CH_3)_2Ph$ ,  $CH_3CH_2Ph$ ,  
 $(CH_3)_2CHPh$ , and 1,2-bis(tetrahydro-2-naphthyl)ethane.  
The  $(CH_3)_2$  and the  $(CH_3)_2$  derivs. above form indan and tetra-  
hydronaphthalene rings, resp., while other products form  
polymeric hydrocarbons. The 1st 3 substances also form  
varying amts. of insol. tridimensional polymer, formed by e-  
limination of benzene. The polymer from

ministration and chain branching. ...  
transformation of  $(CH_3)_3Ph$  is determined by  
Celle in the presence of  $AlCl_3$  its mol. wt. declines and  
 $(CH_3)_3Ph$  is formed; an increased amt. of  $Cl_2$  leads to  
greater destruction, as does an increased amt. of catalyst  
 $AlCl_3$ .  
G. M. Kosolapoff



ROLESNIKOV, G. S.

(14)  
Elem

Chem ab V48

1-25-54

Organic Chemistry

2,4-Dichlorostyrene. V. V. Koshak and G. S. Kolesnik.  
Kov. Khim. Nauk S.S.S.R. *Lab. Org. Khim.*, *Sintezy*  
Org. Soedinenii, Sbornik 2, 92-3 (1953); G. Marvel, et al.,  
C.A. 49, 4025. — Careful heating of 95.5 g. 2,4-Cl<sub>2</sub>C<sub>6</sub>H<sub>3</sub>CH<sub>3</sub>  
(OH)Me with 3 g. powd. KHSO<sub>5</sub> and 1 g. hydroquinone at

90-100 mm. with a smoky flame (or metal bath) gives a dis-  
tillate which after drying with Na<sub>2</sub>SO<sub>4</sub> in the presence of  
hydroquinone is fractionated, yielding 78-88% 2,4-dichloro-  
styrene (yield based on reacted carbinol; 37-40% yield is  
obtained on the carbinol actually employed), bp 80-1°, d<sub>4</sub>  
1.24. Iodometric detn. of unsatn. shows 96-98% purity of  
the product. G. M. Kosolapoff

7-19-54

KOLESNIKOV, G. S.

Chem Abs

V.48 25 Jan 54

Organic Chem

1-(o-Ethoxycarbonyl)ethanol. V. V. Koshak and G. S. Kolesnikov. Akad. Nauk S.S.S.R., Izv. Org. Khim., ~~Stability Org. Sootinents~~, Sbornik 2, 106-6 (1962); cf. Brooks, C.A. 48, 6207<sup>o</sup>.—To 12.2 g. Mg in 250 ml. Et<sub>2</sub>O is gradually added 78 g. MeI keeping the reaction within the limits of the condenser. After warming until complete reaction of Mg the flask is cooled, and with continued cooling and stirring 63 g. o-FC<sub>6</sub>H<sub>4</sub>CHO is added, after which the mixt. is refluxed 30-40 min., cooled and treated with 200 ml. 25-30% aq. NH<sub>4</sub>Cl. The org. layer combined with Et<sub>2</sub>O ext. of the aq. layer gives on distn., after drying, 78-83% o-FC<sub>6</sub>H<sub>4</sub>CH<sub>2</sub>MeOH, b<sub>m</sub> 119-20°, d<sub>4</sub> 1.122. G. M. K.

3  
②  
C. M. K.

ME  
1-27-54

KOLESNIKOV, G. S.

Chem Abs

v.48 25 Jan 54

organic Chem

1,1,1-Trichloro-2-phenylethanol, G. S. Kolesnikov. Akad. Nauk S.S.S.R., *Izv. Vses. Khim. Smeshy Org. Soedinenii*, b. Sbornik 2, 110-12 (1952); cf. Renoll, C.A. 40, 5717. — Abs. iso-PrOH (300 ml.; dried over Ca) is treated with 0.6 g. HgCl<sub>2</sub> and Al-Hg (prepd. by treatment of 30 g. Al shavings with 3-5% NaOH or KOH for 2-3 min., followed by washing with H<sub>2</sub>O 3-4 times, covering with 3-5% HCl containing 0.5-1.0 g. HgCl<sub>2</sub> or HgO, allowing to stand 3-4 min., washing with H<sub>2</sub>O, EtOH, dry Et<sub>2</sub>O, dry iso-PrOH). The mass is heated on a steam bath with shaking and treated with 3-4 ml. CCl<sub>4</sub>; after several min. the reaction becomes self-sustaining (addn. of little iodine may aid the starting of the action). Heating is then continued until complete soln. of Al. This soln. of 3(iso-Pr)Al is treated with 300 ml. abs. iso-PrOH and 138 g. p-FC<sub>6</sub>H<sub>4</sub>Ac and the contents heated under a fractionating column with slow distn. (3-5 drops per min.) for 3-4 hrs., after which iso-PrOH is distd. rapidly, the residue treated, on cooling, with 1:2 HCl and extd. with C<sub>6</sub>H<sub>6</sub>. The ext. yields 75-8% p-FC<sub>6</sub>H<sub>4</sub>CH(OH)Me, bp. 80-4°. G. M. Kosolapoff

(2)

AF 7-27-54

KOTESNIKOV, O. S.

Chem Abs

Y 48 25 Jan 54

Organic Chem

o-Fluorobenzaldehyde. V. V. Korshak and G. S. Kolesnikov. Akad. Nauk S.S.S.R., Inst. Org. Khim., Sintet. Org. Soedinenii, Sbornik 2, 140-1 (1952); cf. Brooks, C.A. 38, 6207. o-MeC<sub>6</sub>H<sub>4</sub>F (110 g.) is illuminated with a 300 w. lamp and heated to 105-10° in a reflux app. while 172 g. Br is added during 1 hr. The temp. reaches 135° in 2

hrs. while an 172 g. more Br is added, the temp. raised to 150° for 10-15 min., cooled (the substance attacks the skin), transferred to a 2 l. flask, and refluxed 14-16 hrs. with 500 ml. H<sub>2</sub>O and 350 g. CaCO<sub>3</sub>. After steam distn. and extn. of the distillate with Et<sub>2</sub>O, the ext. yields 70-6% o-FC<sub>6</sub>H<sub>4</sub>CHO, bp 98-103°. G. M. Kosolapoff

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lum

KOLESNIKOV, G.S.

USSR/Chemistry - Rearylation

1 Jul 52

"The Reaction Mechanism of Rearylation of Diarylalkanes," G. S. Kolesnikov, V. V. Korshak, Inst of Org Chem, Acad Sci SSSR

"Dok Ak Nauk SSSR" Vol LXXXV, No 1, pp 95-98

The 1st step in rearylation of diarylalkanes is formation of a complex with the catalyst (aluminum chloride) which results in polarization of the diaryl bond. Such a complex can then hold several diaryl mols. At elevated temps, this complex decomposes with the sepn of benzene, after which the remaining double complex combines with another diaryl mol. Presented by Acad B. A. Kazanskiy 30 Apr 52.

224T12

KOLESIKOV, G. S.

②<sup>3</sup>

High-molecular weight compounds. LIII. Polycondensation of 1,3-dibromopropane with benzene. G. S. Kolesnikov and V. V. Korshak. *Izv. Akad. Nauk S.S.S.R., Khim. Nauk* 1953, 336-43; cf. *C.A.* 46, 7081g; 48, 5604a. The reaction of  $C_6H_6$  with  $Cl(CH_2)_3Br$  is catalyzed not only by  $AlCl_3$ , but also by  $AlBr_3$ ,  $FeCl_3$ , and  $ZrCl_4$ . Under comparable conditions the mol. wt. of the polyphenylpropyl product is resp. 3940, 2790, 2020, and 1350, with catalysis by  $AlCl_3$ ,  $ZrCl_4$ ,  $AlBr_3$ , and  $FeCl_3$ . The yield (55.7%) and the mol. wt. (3500) of the polymer with  $AlCl_3$  catalysis are max. when 30 mole-%  $AlCl_3$ , relative to  $C_6H_6$ , is employed. A lower proportion of catalyst gave lower yields and lower mol. wts. As the proportion of  $C_6H_6$  in the mixt. is varied the following results are obtained: decrease of the  $C_6H_6$  excess leads to a rise of polymer yield (max. at 30-50 mole-% excess), followed by a decline. The max. mol. wt. is reached with a moderate excess of  $C_6H_6$ . As the  $C_6H_6$  excess declines the formation of hydride terminal groups is favored; this reaction is the reason for the cessation of chain growth. Oxidation with dil.  $HNO_3$ , followed by  $KMnO_4$ , gave mainly  $p-C_6H_4(CO_2H)_2$  and apparently  $p-C_6H_4(CH_2CO_2H)_2$ . Treatment of the polymer with gradually increasing ams. of  $AlCl_3$  led to gradual destruction of the polymer with decreasing mol. wt. of the final product. G. M. Kosolapoff

KOLESNIKOV, G.S.

AID P - 266

Subject : USSR/Chemistry  
Card : 1/1  
Authors : Arundale, E. and Mikeska, L. A.  
Title : The olefin-aldehyde condensation (The Prins reaction)  
Periodical : Usp. khim. 23, No. 2, 223-263, 1954  
Abstract : Translated from English by G. S. Kolesnikov (Chem. Revs. 51, 505-555, 1952).  
Institution : None  
Submitted : No date

1. G. S.

High-molecular compounds

Pub. No. - 22/20

Kolesnikov, G. S.; Korshak, V. V.; and Smirnova, T. V.

High-molecular compounds. Part 70. Growth of chain during polycondensation reaction in the presence of a catalyst

Izv. Ak. SSSR. Otd. khim. nauk 1, 172-178, Jan-Feb 1955

It was established experimentally that the polycondensation reaction of 1,2-dichloroethane with benzene in the presence of an  $AlCl_3$  catalyst was an equilibrium and that the state of equilibrium is determined by the ratio of all basic substances involved in the reaction. Complete destruction was observed in the case of polynervylareatyl exposed to benzene in the presence of an  $AlCl_3$  catalyst.

Acad. of Sc., USSR, The N. D. Zelinskiy Inst. of Org. Chem.

January 27, 1954



Card 2/2      Pub. 40 - 22/27

Periodical :    Izv. AN SSSR. Otd. khim. nauk 1, 172-178, Jan-Feb 1955

ABSTRACT :    The basic rules of this destructive reaction are explained. The rate of growth of the chain, relative to the rate of destruction during the polycondensation, is described. Nine USSR references (1944-1951). Tables; graphs.



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WIKOV, G S.

7-00000000000000000000000000000000

Card 1      Feb. 40 - 24/26

... of the reaction of polyphenyleneethyne with dihalogen aldehydes

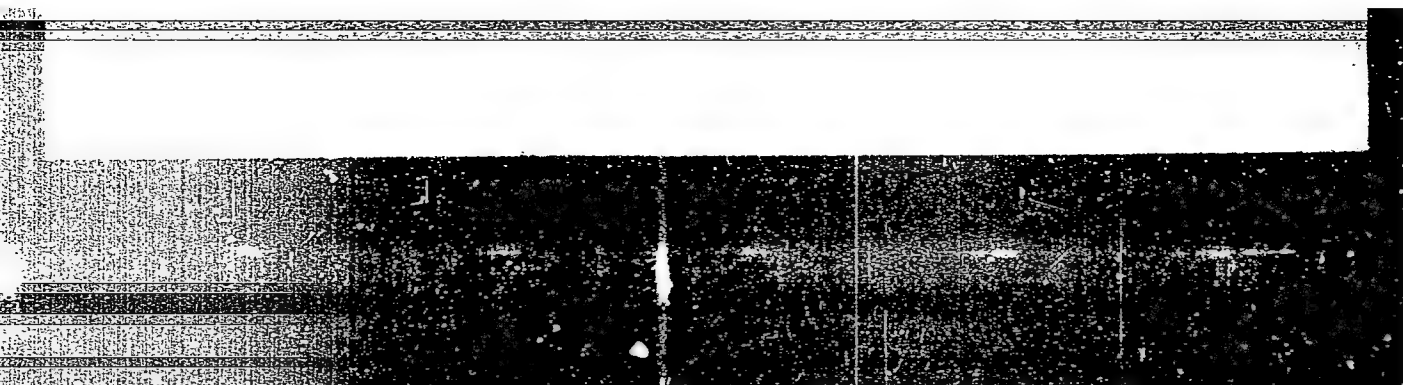
leading to the formation of trimeric products was investigated in the presence of AlCl<sub>3</sub>. It was found experimentally that the addition of AlCl<sub>3</sub> to the reaction mixture led to a significant increase in the yield of trimeric products. The reaction mixture, consisting of various molecular weight, contains most of the trimeric products.

U.S. GOVERNMENT PRINTING OFFICE: 1967 O 374-000

Submitted: January 22, 1954

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000723810008-2



APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000723810008-2"

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000723810008-2



APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000723810008-2"

KOLESHNEV, G.S.; KORSHAK, V.V.; SOBOLEVA, T.A.

High molecular weight compounds. Part 84. Polycondensation of  
1,2-dichloroethane with toluene. Izv. AN SSSR Otd. khim. nauk 86  
no. 6: 1095-1099 My '55. (MLRA 9:4)

1. Institut elementorganicheskikh soyedineniy Akademii nauk SSSR.  
(Ethane) (Toluene)

**KOLESHNIKOV, G.S.; KORSHAK, V.V.**

High molecular weight compounds. Part 85. The polycondensation of  
1,2-dichloroethane with o-dichlorobenzene. Izv. AN SSSR. Otd. khim.  
nauk 86 no. 6: 1100-1106 Ky '55. (MLRA 9:4)

1. Institut elementoorganicheskikh soedineniy Akademii nauk SSSR.  
(Ethers) (Benzene)



Chemistry - Molecular compounds

Pub. 40 - 20/25

Authors : Kolesnikov, G. S.; Korshak, V. V.; Andreyeva, M. A.; and Kitaygorodskiy, A. I.

High molecular compounds. Part 90. Polycondensation of 1,2-dichloroethane with tetralin

Izv. AN SSSR. Otd. khim. nauk 1, 114-119, Jan 1956

ABSTRACT : The polycondensation of 1,2-dichloroethane with tetralin was investigated in the presence of aluminum chloride and the basic laws governing this polycondensation process were established. On the basis of x-ray analysis it was determined that 1,2-di-(beta-tetralyl) ethane is the product obtained during the initial polycondensation stages. The formation of three-dimensional polycondensation products was observed in spite of the fact that the potential function of tetralin is only 4. The effect of benzene-solution concentrations of polytetralylenethyl on the polymer molecule association is discussed. Seven references: 5 USSR and 2 Germ. (1921-1955). Tables; graph.

Acad. of Sc., USSR, Inst. of Organoelemental Compounds

November 18, 1954

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000723810008-2

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000723810008-2"

KOLESNIKOV, G.S.; KORSHAK, V.V.

High molecular weight compounds. Part 92. Effect of the catalyst concentration on the transarylation of 1,2-diphenylethane. Izv. AN SSSR Otd.khim.nauk no.2:239-242 F '56. (MIRA 9:7)

1.Institut elementoorganicheskikh soedineniy Akademii nauk SSSR.  
(Bibenzyl) (Catalysts)

KOLESHNIKOV, G.S.; KORSHAK, V.V.; KULTULIN, I.P.

High molecular weight compounds. Part 96. Synthesis and polymerization of 4-vinyldiphenylethane. Zhur.ob.khim. 26 no.3:735-739  
Apr '56. (MLRA 9:8)

1. Institut elementoorganicheskikh sovedineniy Akademii nauk SSSR.  
(Ethane)

KOLESNIKOV, G. S., KORSHAK, V. V., and SUPRUN, A. P.

"Polycondensation of the system benzol-chlorobenzene-dichlor-ethane,"  
a paper presented at the 9th Congress on the Chemistry and Physics of High  
Polymers, 28 Jan-2 Feb 57, Moscow, Organic Chemistry Research Inst.

B-3,084,395

KOLESNIKOV, G.S.; FEDOROVA, L.S.

Polymerization of acrylonitrile in presence of tributyl boron.  
Izv.AN SSSR. Otd. khim. nauk no.2:236-237 F '57. (MLBA 10:4)

1. Institut elementoorganicheskikh soedineniy Akademii nauk SSSR.  
(Acrylonitrile) (Polymerization)

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000723810008-2

3.3.

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000723810008-2"

<sup>7</sup> <sup>7</sup>  
 Tributylborane as catalyst for polymerization of unsaturated compounds. G. S. Kolesnikov and E. V. Krasnitskaya  
 (Inst. Heterocyclic Compounds, Acad. Nauk S.S.S.R., Odessa, U.S.S.R., Nauk 1957, 639-3. —) Butyl is shown to be a very effective catalyst for the polymerization of Ph-CH=CH<sub>2</sub>, CH<sub>2</sub>=CHCN, and CH<sub>2</sub>=CMeCO<sub>2</sub>Me; the use of 2% catalyst results in rapid polymerization of the monomers within a few hrs.; acrylonitrile, however, polymerizes but sluggishly.  
 G. M. Kosolovoff

4E3d

4E 43  
 4E 2c  
 2 may

fm



"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000723810008-2

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000723810008-2"

AUTHORS: Kolesnikov, G.S., Korshak, V.V., Smirnova, T.V. 62-12-3/20

TITLE: The Synthesis of Polyarylene Alkyls (Sintez poliarilenalkilov)  
Information 1. The Polycondensation of Ethylene Chloride With Halide  
Derivatives of Benzene (Soobshcheniye 1. Polikondensatsiya  
khloristogo metilena s gloidoproizvodnymi benzola)

PERIODICAL: Izvestiya AN SSSR Otdeleniye Khimicheskikh Nauk, 1957, Nr 12,  
pp. 1478-1481 (USSR)

ABSTRACT: In the papers hitherto published the influence exercised by the  
existing substituents in aromatic hydrocarbons upon the course taken  
by the process of polycondensation of these hydrocarbons with 1,2  
dichlorine ethane [2-5] was described. In order to determine the  
above mentioned influence in aromatic hydrocarbons on the process of  
the polycondensation of these hydrocarbons with ethylene chloride  
this investigation was carried out. The method employed was the same  
as in the case of the condensation of methylene chloride with halide  
derivatives of benzene. The following is said by the authors about  
the results obtained by this investigation: The monohalide deri-  
vatives of benzene enter into polycondensation reaction with ethylene  
chloride in the presence of aluminum chloride. Polycondensation

Card 1/2

The Synthesis of Polyarylene Alkyls. Information 1.  
The Polycondensation of Ethylene Chloride With Halide  
Derivatives of Benzene

62-12-8/20

develops in a similar manner as that of methylene chloride with benzene (see tables 1 and 2). In the polycondensation of methylene chloride with bromo-benzene p-dibromo-benzene was found as a basic low-molecular reaction product. Its formation is due to the condition of the bromine atom from a molecule of bromo-benzene to another under the influence of aluminum chloride. Besides p-dibromo-benzene dibromo-phenyl methane is formed as a low-molecular product of the reaction (by oxidation dibromo-benzophenon was obtained). The presence of the halide atom, by the way, exeroises no considerable influence upon the course taken by polycondensation. There are 2 tables, and 8 references, 5 of which are Slavic.

ASSOCIATION: Institute for Element-Organic Compounds AN USSR (Institut elementoorganicheskikh soedineniy Akademii nauk SSSR).

SUBMITTED: July 30, 1956

AVAILABLE: Library of Congress

Card 2/2 1. Ethylene chlorides 2. Benzene-Halide derivatives  
3. Polycondensation

**AUTHORS:**

Kolesnikov, G. S. and Mikhaylovskaya, N. N.

79-2-39/58

**TITLE:**

Derivatives of Hexamethyleneimine. Part 1. Synthesis of N-Alkyl  
Derivatives of Hexamethyleneimine (Proizvodnyye Geksametilenimina. 1  
Sintez N-alkil proizvodnykh geksametilenimina)

**PERIODICAL:**

Zhurnal Obshchey Khimii, 1957, vol 27, No 2, pp. 458-460 (U.S.S.R.)

**ABSTRACT:**

The synthesis of N-alkyl derivatives of hexamethyleneimine was realized by the reaction of hexamethyleneimine with alkyl chloride or alkyl bromides and it was established that alkyl bromides react more smoothly than alkyl chlorides. Simultaneously with the N-alkyl derivatives, the authors also obtained halides of hexamethyleneimine. The intermediate reaction product was a halide of N-alkylhexamethyleneimine which reacted with non-alkylated hexamethyleneimine resulting in the formation of free N-alkylhexamethyleneimine and halides of hexamethyleneimine. It was found that an increase in the molar ratio of the two components from 1:1 to 2:1 increases the yield of N-n-butylhexamethyleneimine from 39 to 75%. The eight different derivatives of N-alkylhexamethyleneimine are listed in a table. All the

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Derivatives of Hexamethyleneimine. Part 1

79-2-39/58

N-alkyl derivatives are described as highly hygroscopic liquids of pungent odor and appear to be compounds with strongly expressed basic properties.

2 tables. There are 5 references, of which 2 are Slavic

ASSOCIATION: Moscow Chemical-Technological Institute imeni D. I. Mendeleev

PRESENTED BY:

SUBMITTED: February 23, 1956

AVAILABLE: Library of Congress

CARD 2/2

KOLESNIKOV, G. S.

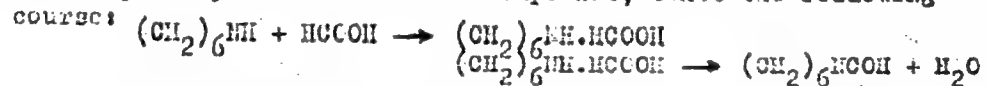
79-11-20/56

AUTHORS: Kolesnikov, G. S. , Smirnova, T. V. , Mizrahi, L. I. , Mikhaylovskaya, E. N. , Shcherbo, L. I.

TITLE: Derivatives of Hexamethylenimine. II. Synthesis of the Hexamethylenamides of Organic Acids (Proizvodnye geksametilenimina. II. Sintez geksametilenamidov organicheskikh kislot)

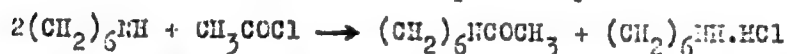
PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 11, pp. 3005 - 3009 (USSR)

ABSTRACT: Continuing the investigation in the field of the synthesis of hexamethylenimine-derivatives the authors attempted to obtain and characterize the hexamethylenamides of organic acids. In patent publications only the use of the hexamethylenamide of formic acid as a solvent of polyacrylonitrile is described, nothing else. The reaction between hexamethylenimine and formic acid, after hydration of the primary salt of the two compounds, takes the following course:



The hexamethylenamide of acetic acid is obtained by action of an excess of hexamethylenimine upon acetylchloride:

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Derivatives of Hexamethylenimine. II. Synthesis of the Hexamethylenamides of Organic Acids

75-11-26/56

In this manner the hexamethylenamides of benzoic acid, carbonic acid, fluoroacetic acid, chloroacetic acid, bromoacetic acid, iodoacetic acid, and  $\beta$ -bromopropionic acid (?) are produced, those of meta-crylic acid and benzenesulfonic acid from their chloranhydrides with hexamethylenimine in the presence of pyridine. Only one of the 12 synthesized hexamethylenamides had been described earlier. There are 1 table, and 4 references, 1 of which is Slavic.

ASSOCIATION: **Moscow Chemical-Technological Institute**  
(Moskovskiy khimiko-tekhnologicheskii institut)

SUBMITTED: December 3, 1956

AVAILABLE: Library of Congress

1. Hexamethylenimine-Derivatives
2. Hexamethylenamides-Synthesis

Card 2/2

KOLESNIKOV, G.S.

79-11-21/56

AUTHORS: Kolesnikov, G. S. , Pogosyan, G. M.

TITLE: Carbo-Interlinked Polymers and Copolymers (Karbotsepnyye polimery i sopolimery) II. Synthesis and Polymerization of 2-Alkoxystyrenes (II. Sintez i polimerizatsiya 2-alkoksistirolov)

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 11, pp. 3009 - 3011 (USSR)

ABSTRACT: The authors described the synthesis and polymerization of 4-alkoxystyrenes and showed that the introduction of an oxygen atom between the aromatic nucleus and the aliphatic radical of the substitute leads to an increase in the temperature of the vitrification in the series of n-alkoxystyrenes. The synthesis and polymerization of 2-alkoxystyrenes was performed for the purpose of determining the influence exerted by the position of the substitute upon the temperature of vitrification of the polymers of alkoxystyrenes. Their synthesis is analogous to the synthesis of 4-alkoxystyrenes, where 2-alkoxybromobenzenes were produced of 2-bromophenol. As result of the polymerization of 2-alkoxystyrenes the authors obtained polymers for which the temperature of vitrification was determined (see table). From the table may be seen that the temperature of vitrification of the polymers decreases with increasing radical-length, as it was also observed in the case of the polymers of

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Carbo-Interlinked Polymers and Copolymers - II. Synthesis and Polymerization of  
2-Alkoxystyrenes

79-11-21/56

4-alkoxystyrenes and 4-alkylstyrenes. The vitrification temperature of the polymers of 2-alkoxystyrenes is somewhat lower than of the polymers of 4-alkoxystyrenes which may only be explained by spatial obstacles caused by the alkoxy groups. Thus six alkoxystyrenes were synthesized (of which five had already previously been known). Their polymers, whose vitrification temperatures were determined, were obtained. There are 1 table and 1 non-Slavic reference.

ASSOCIATION: Institute of Elemental-Organic Compounds AS USSR  
(Institut elementoorganicheskikh soedineniy Akademii nauk SSSR)

SUBMITTED: November 10, 1956

AVAILABLE: Library of Congress

1. 2-Alkoxystyrenes-Synthesis
2. 2-Alkoxystyrenes-Polymerization

Card 2/2

AUTHORS: Kolesnikov, G. S., Korshak, V. V. Smirnova, T. V., 62-1-14/29

TITLE: Synthesis of Polyarylenealkyles (Sintez poliarilenalkilov)  
Report 2: The Polycondensation of 1,2-Dichloroethane with Diaryl-  
alkanes (Soobshcheniye 2. Polikondensatsiya 1,2-dikhloretana s  
diarilalkanami)

PERIODICAL: Izvestiya AN SSSR Otdeleniye Khimicheskikh Nauk, 1958,  
Nr 1, pp 85 - 87 (USSR)

ABSTRACT: As was shown already earlier, 1,2-dichloroethane forms in pre-  
sence of chlorine-aluminum beside the high-molecular products  
of polycondensation 1,2-diphenylethane and bis-(phenylethyl)  
benzene which are apparently the first low-molecular products  
of this reaction. In order to prove this assumption, the authors  
investigated the polycondensation of the 1,2-dichloroethane with  
1,2-diphenylethane in presence of chlorine aluminum. The method  
was the same, except a deviation (reference 1). Tables 1 and 2  
show the experimental results. From the polycondensation of the  
1,2-diphenylethane polyphenyleneethyl (with a much higher mo-  
lecular weight) is formed, obtained by polycondensation of the  
1,2-dichloroethane with benzene. 1,2-dichloroethane enters into  
the reaction of polycondensation not only with 1,2-diphenylethane,  
but also with diphenyl (however, not with diphenylmethane).

Card 1/2

Synthesis of Polyarylenealkylas. Report 2:  
The Polycondensation of 1,2-Dichloroethane with Diarylalkanes

62-1-14/29

There are 2 tables, and 3 Slavic references.

ASSOCIATION: Institute of Elemental-Organic Compounds, AS USSR (Institut  
elementoorganicheskikh soyedineniy Akademii nauk SSSR).

SUBMITTED: June 30, 1956

AVAILABLE: Library of Congress

1. Arylenealkyls-Synthesis
2. 1,2-Dichloroethane-Condensation reactions
3. Diarylalkanes-Condensation reactions

Card 2/2

62-2-16/28

AUTHORS:

Kolesnikov, G. S., Pogosyan, G. M.

TITLE:

Carbo-Chain Polymers and Copolymers (Karbonsepnnyye polimery i sopolimery). Information 1: The Synthesis and Polymerization of 4-Alkoxystyrenes (Soobshcheniye 1. Sintez i polimerizatsiya 4-alkoksistirolov).

PERIODICAL:

Izvestiya AN SSSR Otdelentye Khimicheskikh Nauk, 1958, Nr 2, pp. 227-231 (USSR).

ABSTRACT:

The investigation of the relations between the structure of high-molecular compounds and their properties belongs to the fundamental tasks of the chemistry of compounds of high molecular weight. Their temperature in vitrification is characteristic of these compounds of high molecular weight; the results of investigation, however, have hitherto been highly different. The influence exerted by the quantity of the alkyl substituent upon the vitrification temperature of polymers (4-n. alkylstyrenes) was already investigated by Overberg and his collaborators. It was found that on a prolongation of the duration of the alkyl substituents the temperature of vitrification is reduced. It reaches its lowest level when the alkyl-chain contains 10 carbon atoms. An increase in the alkyl-radical leads

Card 1/2

Carbo-Chain Polymers and Copolymers. Information 1:  
The Synthesis and Polymerization of 4-Alkoxystyrenes.

62-2-16/28

to an increase in the vitrification temperature. More accurate data on the cause of this phenomenon have hitherto been absent. It was therefore of special interest to investigate the influence exerted by the quantity of the alkoxy-substituent upon the temperature of vitrification of the polymers of 4-alkoxystyrenes. The authors synthesized five 4-alkoxystyrenes and obtained for the first time: 4-n-propoxy-styrene, 4-n.butoxystyrene, as well as 4-isoamylooxystyrene. It was shown that the vitrification temperature of the polymers of 4-n.alkoxystyrenes decreases with a lengthening of the radical in the alkoxy group. It was further shown that the introduction of the oxygen atom between alkyl-radical and aromatic nucleus increases the vitrification temperature of the polymers. There are 1 table and 5 references, 2 of which are Slavic.

ASSOCIATION:	Institute for Element-Organic Compounds AN USSR (Institut elementoorganicheskikh soedineniy akademii nauk SSSR).
SUBMITTED:	October 8, 1956
AVAILABLE:	Library of Congress
Card 2/2	1. 4-Alkoxystyrenes-Polymerization    2. 4-Alkoxystyrenes-Synthesis

AUTHORS: Kolesnikov, G. S., Soboleva, T. A., 62-2-24/28  
TITLE: The Synthesis of the Copolymers of Ethylene (Sintez sopolimerov  
etilena)  
PERIODICAL: Izvestiya AN SSSR Otdeleniya Khimicheskikh Nauk; 1958, Nr 2,  
pp. 242-243 (USSR)

ABSTRACT:

It was already shown in earlier papers that ethylene is synthesized in the presence of tributylboron under a pressure of more than 50 at. excess pressure. It was also already found that tributylboron may serve as a catalyst in the polymerization of acrylnitril, styrene and methylmetacrylate. In connection with these determinations it was of interest to determine the possibility of a synthesis with the above-mentioned unsaturated compounds (with the use of tributylboron as a polymerization catalyst). The experiment showed that copolymers of ethylene could be obtained with styrene, methylmetacrylate, acrylnitril and vinylacetate in the performance of the reactions in toluene in the presence of tributylboron as catalyst of polymerization. (See table.) There are 1 table, and 3 Slavic references.

Card 1/2

The Synthesis of the Copolymers of Ethylene

62-2-24/28

ASSOCIATION: Institute for Element-Organic Compounds AN USSR (Institut  
elementoorganicheskikh soyedineniy Akademii nauk SSSR)

SUBMITTED: October 11, 1957

AVAILABLE: Library of Congress

1. Elhylene copolymers-Synthesis Applications
2. Tributylboron catalyst-

Card 2/2

AUTHORS: Korshak, V. V., Kolesnikov, G. S. Fedorova, L. S. 62-58-3-16/30

TITLE: Synthesis of Polyarylene Alkyls (Sintez poliarilenalkilov)  
Communication 3. The Polycondensation of 1,2-Dichlorethane  
With Fluorobenzene (Soobshcheniye 3. Polikondenzatsiya  
1,2-dikhloretana s ftorobenzolom)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk,  
1958, Nr 3, pp. 353-356 (USSR)

ABSTRACT: During the investigation of the polycondensation of aromatic  
hydrocarbons with dihaloidalkanes in the presence of aluminum  
chloride the authors discovered that the presence of a  
substituent in the benzene nucleus (e. g. of the chlorine  
atom or methyl group) renders the formation of three-dimensio-  
nal polycondensation products difficult. For the purpose of  
determining the influence of the magnitude of a substituent  
upon the tendency toward the formation of three-dimensional  
products the authors investigated the polycondensation of  
1,2-dichlorethane with fluorobenzene in the presence of  
aluminum chloride. For the purpose of determining the in-  
fluence of the correlation of the reacting substances upon

Card 1/2



62-58-3-16/30

Synthesis of Polyarylene Alkyls.

Communication 3. The Polycondensation of 1,2-Dichlorethane With Fluorobenzene

the course of the condensation process a whole number of experiments was performed. The method of investigation was the same as in earlier performed investigations (reference 3) with the only difference that after the distillation of the solvent difluorodiphenylethane and 2,4-bis-[ $\beta$ -(4-fluorophenyl)-ethyl]-fluorobenzene were also distilled in vacuum. For this see tables 1 and 2. The authors further determined: the structure of the basic member of the product of polycondensation of fluorobenzene with 1,2-dichlorethane. The following compounds were synthesized for the first time: 2,4-dimethyl-fluorobenzene, 2,4-fluorobenzene-dicarboxylic acid and the dimethyl ester of this acid. There are 2 tables and 4 references, all of which are Soviet.

ASSOCIATION:

Institut elementoorganicheskikh soedineniy Akademii nauk SSSR (Institute for ~~Elemental-organic~~ Compounds AS USSR)

SUBMITTED:

October 9, 1956

Card 2/2

5(3)

AUTHORS:

Kolesnikov, G. S., Kabanova, T. A.

SOV/153-58-3-12/30

TITLE:

Derivatives of Hexamethylene Imine (Proizvodnyye Geksa-  
metilenimina) IV. Esters of N-Hexamethyleneamine  
Acetic Acid (IV. Efiry N-geksametilenaminouksusnoy kisloty)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimiches-  
kaya tekhnologiya, 1958, Nr 3, pp 66 - 68 (USSR)

ABSTRACT:

As a further study in the field of the synthesis of  
the derivatives mentioned in the title the authors  
tried to produce these esters with a general formula  
(CH<sub>2</sub>)<sub>6</sub> NR'COOR and to characterize them. The respective  
results are given which relate to the synthesis of  
such esters that can be produced by interaction of the  
corresponding esters of chloroacetic acid with hexa-  
methylene imine. The table presents their properties.  
There are: methyl, ethyl, n.propyl, isopropyl, allyl,  
n.butyl, isoamyl, n.octyl (secondary), β-fluoro-ethyl,  
benzyl-phenyl, 2-bromo-phenyl and 2-cresyl esters  
of the acid mentioned in the subtitle. The aromatic

Card 1/2

Derivatives of Hexamethylene Imine. IV. Esters of N-Hexamethyleneamine Acetic Acid

SOV/153-58-3-12/30

chloro acetic acid esters react more slowly with hexamethylene imine than the aliphatic ones. The lengthening of the alkyl radical in the series of the aliphatic esters of the chloro acetic acid retards the interaction of the ester with hexamethylene imine. The method of synthesis was described in previous papers (Refs 1,2). In the experimental part the yields and some constants of the esters mentioned are described. There are 1 table and 2 Soviet references.

ASSOCIATION: Moskovskiy Khimiko-tekhnologicheskii institut imeni D.I.Mendeleyeva (Moscow Institute of Chemical Technology imeni D.I.Mendeleyev)

SUBMITTED: October 17, 1957

Card 2/2

KOLESNIKOV, G.S.

AUTHORS:

Kolesnikov, G. S., Korshak, V. V.  
Suprun, A. P.

62-58-4-16/32

TITLE:

Synthesis of Polyarylene Alkyls (Sintez poliarilenal-  
kilov). Communication 4. Temperature Influence on  
the Course of the Copolycondensation of Benzene  
and Chlorobenzene with Dichloroethane (Soobshcheniye  
4. Vliyaniye temperatury na techeniye sovmestnoy poli-  
kondensatsii benzola i khlorbenzola s dikhloretanom)

PERIODICAL:

Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh  
Nauk, 1958, Nr 4, pp. 492-49, (USSR;

ABSTRACT:

Until now mainly the influence of the mixture of initial  
substances on the properties of the forming polyconden-  
sation products has been investigated. It was assumed  
that the compositions of the copolymer and the mixture  
of initial substances was identical. This is, however,  
only correct when a certain polycondensation equilibrium  
exists. When this equilibrium does not exist the initial  
substances can be made use of only insufficiently. This  
again leads to the formation of copolymers as could be

Card 1/3